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EXAMINER	
ANDERSON, GUY G	

ART UNIT	PAPER NUMBER
2883	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/573,436	SEIFERT, MARTIN	
	Examiner	Art Unit	
	Guy G. Anderson	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-17,19-41* is/are rejected.

7)☒ Claim(s) *6 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/24/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.1 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1.2 **Claims 1, 12 are rejected under 35 U.S.C. 102(b)** as being anticipated by US-5838858 to White.

Regarding claim 1, 12, White specifically discloses a fiber optic connection unit comprising/wherein:

1) a body comprising an inwardly facing surface adapted for receiving a plurality of loops of a length of optical fiber, said body including at least a portion wherein said inwardly facing surface is continuous between two adjacent loops. [Fig. 11.]

12) comprising said length of fiber. [Fig. 11.]

1.3 **Claims 1-2, 4-5, 10-12 are rejected under 35 U.S.C. 102(b)** as being anticipated by US-4730887 to Boscher.

Regarding claim 1-2, 4-5, 10-12 Boscher specifically discloses a fiber optic coupling device comprising/wherein:

1) a body comprising an inwardly facing surface adapted for receiving a plurality of loops of a length of optical fiber, said body including at least a portion wherein said inwardly facing surface is continuous between two adjacent loops. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

2) said surface is adapted such that at least the majority of all of the loops to be received by said surface will be received so as to be substantially coaxial. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

4) a second body that can be mated with the body, said second body having an outer surface that faces said inwardly facing surface of said body when said bodies are mated. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

5) second body can be removably and replaceably mated with said body. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

10) at least one passageway for a section of said length of fiber to pass from said plurality of loops. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

11) passageway is arranged such that said section of said length of fiber from said loop enters said passageway substantially along a tangent to one of said plurality of loops. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

12) comprising said length of fiber. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

1.4 **Claims 1, 38-39 are rejected under 35 U.S.C. 102(b)** as being anticipated by US-6944387 to Howell.

Regarding claim 1, 38-39, Howell specifically discloses a fiber optic coupling device and method comprising/wherein:

1) a body comprising an inwardly facing surface adapted for receiving a plurality of loops of a length of optical fiber, said body including at least a portion wherein said inwardly facing surface is continuous between two adjacent loops. [Abstract, Fig. 1, #90, 91,92,110.]

38) providing an optical fiber; providing first and second bodies mated together, the mated bodies defining at least one passage bounded at least in part by the first and second bodies; disposing a length of the optical fiber into at least one loop within the at least one passage while providing relative movement between the first and second bodies. [Abstract, Fig. 1, #90, 91,92,110.]

39) disposing the length of optical fiber includes passing the length of fiber through an outside region surrounded at least in part by one of the bodies. [Abstract, Fig. 1, #90, 91,92,110.]

1.5 **Claims 30-33 are rejected under 35 U.S.C. 102(b)** as being anticipated by US-6424784 to Olson.

Regarding claim 30-33 Olson specifically discloses a fiber optic coupling device comprising/wherein:

30) first and second bodies adapted for being mated together to define a plurality of passages for housing a plurality of loops of a length of optical fiber. [Abstract, Fig. 2, #100, 112,114,118,122,128,129.]

31) said plurality of loops have substantially the same radius of curvature. [Abstract, Fig. 2, #100, 112,114,118,122,128,129.]

32) said plurality of passages comprises a helical passage. [Abstract, Fig. 2, #100, 112,114,118,122,128,129.]

33) each of said plurality of passages comprises a closed cross section. [Abstract, Fig. 2, #100, 112,114,118,122,128,129.]

Claim Rejections - 35 USC § 103

2.1 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.2 **Claim 3 is rejected under 35 U.S.C. 103(a)** as being unpatentable over the combination of White and Olson. White discloses all of the limitations of the base claims upon which Claim 3 depends.

Regarding claim 3, White does not specifically disclose a structure:

3) wherein said surface comprises a helical groove for receiving said loops of optical fiber.

Olson discloses helical windings as a means of storing fiber. [Abstract, Fig. 2, #100, 112,114,118,122,128,129.]

Since Olson and White are from the same field of endeavor, the helical windings of Olson would have been recognized as being in the pertinent art of White.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the helical windings of Olson with the storage spool of White to create a more efficient means of storing fiber.

2.3 **Claims 7-9 are rejected under 35 U.S.C. 103(a)** as being unpatentable over the combination of Boscher and Olson. Boscher discloses all of the limitations of the base claims upon which Claim 7-9 depends.

Regarding claim 7-9, Boscher does not specifically disclose a structure:

7) said body comprises at least one of aluminum and copper.

8) wherein said body generally comprises a ring shape

9) wherein said body comprises means for increasing heat transfer to or from the body.

Olson discloses these limitations as a means of minimizing the temperature gradient on the fiber. [Col. 6, lines 22-50.]

Since Olson and Boscher are from the same field of endeavor, the copper body and ring shape of Olson would have been recognized as being in the pertinent art of Boscher. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the copper body and ring shape of Olson with the storage spool of Boscher in order to reduce the temperature gradient on the fiber.

2.4 **Claim 13 is rejected under 35 U.S.C. 103(a)** as being unpatentable over Boscher.

Regarding claim 13, Boscher discloses a structure:

13a) said length of optical fiber comprising a plurality of loops;

a body comprising an inwardly facing surface receiving said plurality of loops of said length of optical fiber. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

However, Boscher does not specifically disclose:

13b) a length of optical fiber comprising a rare earth element.

Rare earth elements such as erbium are well known in the art as fiber amplifiers. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include rare earth fibers in the structure.

2.5 **Claim 14, 16-17, 19, 22-23 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Boscher. Boscher discloses all of the limitations of the base claims upon which Claim 14, 16-17, 19, 22-23 depends.

Regarding claim 14, 16-17, 19, 22-23, Boscher specifically discloses a structure:

14) wherein all loops received by said inwardly facing surface are substantially coaxial. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

16) comprising a second body that can be mated with said body, said second body having an outer surface that faces said inwardly facing surface of said body when said bodies are mated. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

17) wherein said second body can be removably and replaceably mated with said body. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

19) wherein said second body, when mated with said body, does not substantially compress said plurality of loops. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

22) comprising at least one passageway for a section of said fiber to pass from said plurality of loops. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

23) wherein said passageway is arranged such that said section of fiber from said loop enters said passageway substantially along a tangent to one of said plurality of loops. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

2.6 **Claim 15, 20-21 are rejected under 35 U.S.C. 103(a)** as being unpatentable over the combination of Boscher and Olson. Boscher discloses all of the limitations of the base claims upon which Claim 15, 20-21 depends.

Regarding claim 15, 20-21, Boscher does not specifically discloses a structure:

15) wherein said inwardly facing surface comprises a helical groove receiving said loops of optical fiber.

20) wherein said body comprises at least one of aluminum and copper.

21) comprising means for increasing the transfer of heat to or from said body.

Olson discloses these limitations as a means of minimizing the temperature gradient on the fiber and of storing fiber more efficiently in helical grooves to aid in the winding process. [Col. 6, lines 22-50.]

Since Olson and Boscher are from the same field of endeavor, the copper body and helical grooves of Olson would have been recognized as being in the pertinent art of Boscher. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the copper body and helical grooves of Olson with the storage spool of Boscher in order to reduce the temperature gradient on the fiber.

2.7 **Claims 24-29 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Boscher. Boscher discloses all of the limitations of the base claims upon which Claim 24-29 depends.

Regarding claim 24-29, Boscher does not specifically discloses a structure:

> 24) wherein responsive to receiving light of a first wavelength said rare earth can provide light of a second wavelength that is different than said first wavelength and wherein said fiber is normally multimode at said second wavelength.
>
> 25) wherein when said loops are shaped such that higher order modes are attenuated substantially more than a fundamental mode of said fiber.
>
> 26) comprising a light source optically coupled to said optical fiber for providing the light of the first wavelength.
>
> 27) comprising a second light source optically coupled to said optical fiber for providing light of the second wavelength.
>
> 28) comprising at least one fiber grating for reflecting light of said second wavelength.
>
> 29) comprising at least one fiber grating for reflecting light of said second wavelength.

However, in regards to claim 24, rare earth elements such as erbium are well known in the art and are used as erbium doped fiber lasers and amplifiers.

In regards to claim 25, bending of optical fibers is well known in the art to cause attenuation of the higher modes more than the fundamental mode.

In regards to claim 26-27, providing a light source to an optical fiber is inherent.

In regards to claim 28-29, gratings are well known in the art. For example, the structure of Olson is designed to be used with Fiber Bragg gratings. Further, gratings are used as the reflective surfaces in fiber lasers.

Therefore, it would have been obvious to one of ordinary skill in the art to use the structure of Boscher in conjunction with a rare earth doped fiber laser or fiber amplifier constructed with gratings and provided with various light sources in order to store the kilometers long fiber required for a fiber laser/amplifier.

2.8 **Claims 34-37 are rejected under 35 U.S.C. 103(a)** as being unpatentable over the combination of Boscher and Olson. Boscher discloses all of the limitations of the base claims upon which Claim 34-37 depends.

Regarding claim 34-37, Boscher specifically discloses a method comprising:

34a) providing a body; providing a length of optical fiber, and receiving a plurality of loops of said fiber with a surface of the body, said plurality further being received such that said body can physically expand without subjecting said plurality of loops to an increase in tension. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

36) wherein said body comprises an inwardly facing surface for receiving at least part of an outer face of each of said plurality of loops. [Abstract, Fig. 4, #20, Col.3-4, lines 1-67.]

Boscher does not specifically disclose a method comprising:

34b) the fiber comprising a rare earth.

35) wherein said body comprises one of aluminum and copper.

37) wherein said inwardly facing surface comprises a helical groove for receiving the plurality of loops.

Olson discloses these limitations as a means of minimizing the temperature gradient on the fiber and of storing fiber more efficiently in helical grooves to aid in the winding process. [Col. 6, lines 22-50.]

Since Olson and Boscher are from the same field of endeavor, the copper body and helical grooves of Olson would have been recognized as being in the pertinent art of Boscher. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the copper body and helical grooves of Olson with the storage spool of Boscher in order to reduce the temperature gradient on the fiber.

2.9 **Claim 40 is rejected under 35 U.S.C. 103(a)** as being unpatentable over the combination of Howell. Howell discloses all of the limitations of the base claims upon which Claim 40 depends.

Regarding claim 40, Howell specifically discloses a structure:

40a) wherein the first body, when mated with the second body, surrounds the second body. [Abstract, Fig. 1, #90, 91,92,110.]

Howell does not specifically disclose:

40b) wherein moving one of the bodies includes rotating the first body.

However, rotating circular bodies are well known in many arts. For example, a bobbin on a sewing machine that rotates to take up or give out fiber threads.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide a rotating spool for the taking up and playing out of optical fiber.

2.10 **Claim 41 is rejected under 35 U.S.C. 103(a)** as being unpatentable over the combination of Howell and Olson. Howell discloses all of the limitations of the base claims upon which Claim 40-41 depends.

Regarding claim 41, Howell does not specifically discloses a structure:

41) wherein the first and second bodies each comprise a ring shape.

Olson discloses two bodies that comprise a ring shape as a means of wrapping fiber in a circular manner.

Since Olson and Howell are from the same field of endeavor, the ring shape pf Olson would have been recognized as being in the pertinent art of Howell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine the ring shape of Olson with the structure of Howell in order to provide a circular storage spool for optical fiber.

Allowable Subject Matter

3.1 Claims 6 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

3.2 The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus for storing or accommodating optical fiber comprising a split ring that can be compressed for facilitating mating of a second body with a first body as claimed.

Conclusion

4.1 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy G. Anderson whose telephone number is 571.272.8045. The examiner can normally be reached on Tuesday-Saturday 0900-2200.

4.2 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571.272.2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

4.3 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

4.4 Date and signature of assistant examiner.

June 7, 2007

Frank G. Font
Supervisory Patent Examiner
Technology Center 2800